

## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims:**

Claim 1 (currently amended): Apparatus for automatically building an electronic form for presentation to a user during a data capture process, comprising:

means for ~~receiving as input~~ generating a self-contained platform-independent data capture definition file specifying data elements required during data capture, each data element having a type specification and a logical relationship relative to other data elements in a hierarchical structure defined in the data capture definition file, the means for generating the data capture definition file further including means for enabling automatic building of portions of said data capture definition file according to a form definition standard; and

means for receiving as input the self-contained platform-independent data capture definition file and automatically generating a plurality of visual displays for presentation to a user during execution of a data capture process, each visual display having an automatically determined form layout comprising a plurality of user input areas corresponding to the data elements, in which the form layout and physical positioning of the user input areas on each display are determined, during runtime of the data capture process from information in the data capture definition file, in a manner corresponding to the defined logical hierarchical structure.

Claim 2 (previously presented):      The apparatus of claim 1 wherein the data capture definition file is in XML format.

Claim 3 (previously presented):      The apparatus of claim 1 in which the data capture definition file further includes a functional specification of data validation operations to

be performed in respect of at least some of said data elements during execution of said data capture process, said means for generating further including means for executing said data validation operations during said data capture process.

Claim 4 (currently amended): The apparatus of claim 1 in which the data capture definition file further includes a functional specification of rule-based actions to be taken during execution of the data capture process, said means for generating visual displays further including means for executing said rule-based actions during said data capture process, and determining successive visual displays for presentation to the user during the data capture process according to values of data captured and the rule-based actions applicable thereto.

Claim 5 (previously presented): The apparatus of claim 1 in which the data capture definition file further includes a functional specification of a data model defining the bindings of data elements with an output message format.

Claim 6 (currently amended): The apparatus of claim 1 in which the data capture definition file further includes a functional specification of data exchange requirements according to [[a]] the form definition standard.

Claim 7 (canceled).

Claim 8 (currently amended): The apparatus of claim 4 ~~further including~~ wherein the means for generating the data capture definition file ~~which~~ further includes means for incorporating said rule-based actions to be performed during execution of the data capture process, by a rule builder interface that enables rule actions and conditions to be assigned to data capture events.

Claim 9 (currently amended): The apparatus of claim 1 ~~further including~~ wherein the means for generating the data capture definition file ~~which~~ further includes binding

interface means for incorporating binding definitions into said data capture definition file, each binding definition defining the binding of a data element to a defined external data model.

Claim 10 (currently amended):       The apparatus of claim 1 further including means for ensuring that said specification of data elements complies with ~~[[a]]~~ the form definition standard.

Claim 11 (previously presented):    The apparatus of claim 1 further including means for executing a data capture process, comprising:

          means for generating a succession of visual displays for presentation to a user, the physical layout of said visual displays being determined, during execution of the data capture process, according to the defined data elements and their hierarchical structure in the data capture definition file, and according to process and display conditions prevailing in the platform executing the data capture process.

Claim 12 (original):   The apparatus of claim 11 in which the means for executing the data capture process further includes means for executing data validation operations according to a functional specification of data validation operations defined in said data capture definition file.

Claim 13 (original):   The apparatus of claim 11 in which the means for executing the data capture process further includes means for executing rule-based actions according to a functional specification of rule-based actions defined in said data capture definition file.

Claim 14 (currently amended):       Apparatus for generating a self-contained platform-independent data capture definition file for defining data elements required from a user during a data capture process, comprising:

          means for receiving as input a specification of data elements required during data capture, each data element having a type specification and a logical relationship relative

to other data elements in a hierarchical structure, said type specifications and said hierarchical structure being usable for automatically determining a physical layout of visual displays for presentation to a user during a subsequent data capture process;

means for associating, with said data elements, a set of data validation requirements for validating data captured in respect of each of the data elements;

means for associating, with said data elements, a set of rules for execution during a subsequent data capture process, for further enabling automatic determination of a physical layout of the visual displays to be presented to a user during said subsequent data capture process based on values of data captured during said data capture process; and

means for generating said self-contained platform-independent data capture definition file defining said specification of data elements, said hierarchical structure, said data validation requirements and said set of rules in a predetermined format for subsequent execution by a data capture process, the means for generating said self-contained platform-independent data capture definition file further including means for enabling automatic building of portions of said data capture definition file according to a form definition standard.

Claim 15 (original): The apparatus of claim 14 wherein the data capture definition file conforms to a standard that can be executed on a plurality of different platforms.

Claim 16 (original): The apparatus of claim 15 in which the data capture definition file is generated in XML format.

Claim 17 (currently amended): The apparatus of claim 14 further including means for incorporating, into said data capture definition file, a functional specification of data exchange requirements according to [[a]] the form definition standard.

Claim 18 (canceled).

Claim 19 (original): The apparatus of claim 14 further including binding interface means for incorporating binding definitions into said data capture definition file, each binding definition defining the binding of a data element to a defined external data model.

Claim 20 (currently amended): The apparatus of claim 14 further including means for ensuring that said specification of data elements complies with [[a]] the form definition standard.

Claim 21 (previously presented): The apparatus of claim 14 further including means for assigning, to the data capture definition file, document ownership and execution rights.

Claim 22 (original): The apparatus of claim 14 further including means for generating at least a part of the data capture definition file by automatic copying of a global template.

Claim 23 (original): The apparatus of claim 22 further including means for correlating changes made in global templates with relevant parts of data capture definition files that have been built using those templates.

Claim 24 (original): The apparatus of claim 23 further including means for generating an impact analysis report identifying potential consequences to relevant data capture definition files resulting from a proposed change to a template.

Claim 25 (original): The apparatus of claim 14 further including a document validation module for ensuring compliance of a generated data capture definition file with at least one of a form definition standard, a function definition standard and a data model standard.

Claim 26 (original): The apparatus of claim 14 in which the means for generating said data capture definition file further includes means for associating each data element with a respective section or sub-section in said logical hierarchical structure.

Claim 27 (previously presented): The apparatus of claim 11 in which the means for generating a succession of visual displays further comprises:

means for inferring a relative physical positioning of user prompts for data element capture and a sequential progression of user prompts for data element capture from the data capture definition file, and

means for determining absolute physical positioning of user prompts and presentation styles thereof according to criteria defined in the means for executing the data capture process, and not the data capture definition file.

Claim 28 (currently amended): The apparatus of claim 1 ~~further including means for generating the data capture definition file~~, in which the means for generating said data capture definition file and the means for generating visual displays operate on different computing platforms.

Claim 29 (currently amended): Apparatus for automatically generating an electronic form for presentation to a user during a data capture process, the apparatus comprising:

means for ~~receiving as input~~ generating a self-contained platform-independent data capture definition file in a predetermined format providing a specification of data elements required during data capture, each data element having a type specification and a logical relationship relative to other data elements in a hierarchical structure defined in the data capture definition file, the means for generating the data capture definition file further including means for enabling automatic building of portions of said data capture definition file according to a form definition standard; and

means for receiving as input the self-contained platform-independent data capture definition file and automatically generating a plurality of visual displays for presentation

to the user, each visual display having an automatically determined form layout including a plurality of user input areas and user prompts relating thereto corresponding to the data elements, in which the form layout and physical positioning of the user input areas on each display are determined, during runtime of the data capture process from information in the data capture definition file, in a manner corresponding to the defined logical hierarchical structure.

Claim 30 (currently amended): A computerized method of automatically building an electronic form for presentation to a user during a data capture process, comprising:

in a first computer process, ~~receiving as input~~ generating a self-contained platform-independent data capture definition file specifying data elements required during data capture, each data element having a type specification and a logical relationship relative to other data elements in a hierarchical structure defined in the data capture definition file, wherein generating the data capture definition file includes automatic building of portions of said data capture definition file according to a form definition standard; and

in a second computer process, receiving as input the self-contained platform-independent data capture definition file and automatically generating a plurality of visual displays for presentation to a user during execution of a data capture process, each visual display having an automatically determined form layout comprising a plurality of user input areas corresponding to the data elements, in which the form layout and physical positioning of the user input areas on each display are determined, during runtime of the data capture process from information in the data capture definition file, in a manner corresponding to the defined logical hierarchical structure.

Claim 31 (currently amended): A computerized method of generating a self-contained platform-independent data capture definition file for defining data elements required from a user during a data capture process, comprising:

in a first computer process, receiving as input a specification of data elements required during data capture, each data element having a type specification and a logical

relationship relative to other data elements in a hierarchical structure, said type specifications and said hierarchical structure being usable for automatically determining a physical layout of visual displays for presentation to a user during a subsequent data capture process;

in a second computer process, associating, with said data elements, a set of data validation requirements for validating data captured in respect of each of the data elements;

in a third computer process, associating, with said data elements, a set of rules for execution during a subsequent data capture process, for further enabling automatic determination of a physical layout of the visual displays to be presented to a user during said subsequent data capture process based on values of data captured during said data capture process; and

in a fourth computer process, generating said self-contained platform-independent data capture definition file defining said specification of data elements, said hierarchical structure, said data validation requirements and said set of rules in a predetermined format for subsequent execution by a data capture process, wherein generating the data capture definition file includes automatic building of portions of said data capture definition file according to a form definition standard.

Claim 32 (currently amended): A computerized method of generating an electronic form for presentation to a user during a data capture process, comprising:

in a first computer process, ~~receiving as input~~ generating a self-contained platform-independent data capture definition file in a predetermined format providing a specification of data elements required during data capture, each data element having a type specification and a logical relationship relative to other data elements in a hierarchical structure defined in the data capture definition file, the means for generating the data capture definition file further including means for enabling automatic building of portions of said data capture definition file according to a form definition standard;

in a second computer process, receiving as input the self-contained platform-independent data capture definition file and automatically generating a plurality of visual



displays for presentation to the user, each visual display having an automatically determined form layout including a plurality of user input areas and user prompts relating thereto corresponding to the data elements, in which the form layout and physical positioning of the user input areas on each display are determined, during runtime of the data capture process from information in the data capture definition file, in a manner corresponding to the defined logical hierarchical structure.

Claim 33 (previously presented): A computer program product, comprising a tangible computer readable medium having thereon computer program code adapted, when said computer program code is loaded onto a computer, to make the computer execute the procedure of any one of claims 30 to 32.

Claim 34 (canceled).

Claim 35 (canceled).

Claim 36 (currently amended): Apparatus for automatically building an electronic form for presentation to a user during a data capture process, comprising:

a data capture definition file generator for generating an input for receiving a self-contained platform-independent data capture definition file specifying data elements required during data capture, each data element having a type specification and a logical relationship relative to other data elements in a hierarchical structure defined in the data capture definition file, the data capture definition file generator enabling automatic building of portions of said data capture definition file according to a form definition standard; and

a visual display generator coupled to receive the data capture definition file for automatically generating a plurality of visual displays for presentation to a user during execution of a data capture process, each visual display having an automatically determined form layout comprising a plurality of user input areas corresponding to the data elements, in which the form layout and physical positioning of the user input areas

on each display are determined, during runtime of the data capture process from information in the data capture definition file, in a manner corresponding to the defined logical hierarchical structure.

Claim 37 (currently amended): Apparatus for generating a self-contained platform-independent data capture definition file for defining data elements required from a user during a data capture process, comprising:

an input for receiving a specification of data elements required during data capture, each data element having a type specification and a logical relationship relative to other data elements in a hierarchical structure, said type specifications and said hierarchical structure being usable for automatically determining a physical layout of visual displays for presentation to a user during a subsequent data capture process;

a data capture definition file generator for associating, with said data elements, a set of data validation requirements for validating data captured in respect of each of the data elements and a set of rules for execution during a subsequent data capture process, for further enabling automatic determination of a physical layout of the visual displays to be presented to a user during said subsequent data capture process based on values of data captured during said data capture process, and generating said self-contained platform-independent data capture definition file defining said specification of data elements, said hierarchical structure, said data validation requirements and said set of rules in a predetermined format for subsequent execution by a data capture process, the data capture definition file generator enabling automatic building of portions of said data capture definition file according to a form definition standard.

Claim 38 (currently amended): Apparatus for generating an electronic form for presentation to a user during a data capture process, the apparatus comprising:

a data capture definition file generator for generating an input for receiving a self-contained platform-independent data capture definition file in a predetermined format providing a specification of data elements required during data capture, each data element having a type specification and a logical relationship relative to other data elements in a

hierarchical structure defined in the data capture definition file, the data capture definition file generator enabling automatic building of portions of said data capture definition file according to a form definition standard; and

a visual display generator coupled to receive the data capture definition file for automatically generating a plurality of visual displays for presentation to the user, each visual display having an automatically determined form layout including a plurality of user input areas and user prompts relating thereto corresponding to the data elements, in which the form layout and physical positioning of the user input areas on each display are determined, during runtime of the data capture process from information in the data capture definition file, in a manner corresponding to the defined logical hierarchical structure.